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ABSTRACT

Level of state test anxiety and depression were related to encoding strategy (imagery versus sematic instructions) in a study of sentence memory. Subjects were 80 female undergraduate students. Negative effects for test anxiety were found in both strategy conditions. Negative effects were found for depression when the semantic encoding strategy was used, but positive effects were found with the imagery strategy. These effects appeared to hold for both free recall and cued recall. The results suggested that different emotional states may lead to different performance outcomes, depending upon the nature of the encoding strategy employed. A quantitative effect was suggested for the emotional state of anxiety; anxiety interferes with a memory process that underlies performance in a variety of task conditions. Depression, however, appeared to have a qualitative effect; different processes were affected by the two encoding strategies, and the result varied by level of depression. (GDC)

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Test Anxiety and Depression in Sentence Memory: Parallel Effects?

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Abstract

Level of state test anxiety and depression were related to encoding strategy (imagery, semantic) in a study of long-term sentence memory. Negative test anxiety effects were found in both strategy conditions. In contrast, negative depression effects (highs < lows) were found with a semantic encoding strategy, but positive effects were found with an imagery strategy. The effects appeared to hold for both free recall and cued recall. These results suggest that different emotional states may lead to different performance outcomes depending upon the nature of the encoding strategy employed. The exact mechanism (s) are not clear, but the pattern of findings suggests a qualitative effect for depression, but a quantitative one for test anxiety.

Test Anxiety and Depression in Sentence Memory: Parallel Effects?

In the test anxiety literature, an impressive body of evidence suggests that the detrimental effects of test anxiety upon learning, memory, and performance exist, can be demonstrated in educational and laboratory settings across elementary school through college, and are particularly robust under conditions of evaluative stress and failure (Krohne & Laux, 1982; Sarason, 1980; Schwarzer, van der Ploeg, & Spielberger, 1982; van der Ploeg, Schwarzer, & Spielberger, 1983-1985). In the general experimental literature as well, the effects of other emotional states upon memory (e.g., depression, elation, sadness, etc.) are currently receiving a great deal of attention (e.g., Bower, 1981; Ellis, Thomas, & Rodriquez, 1984; Leight & Ellis, 1981). There is now considerable evidence that variables related to anxiety and other emotional states can influence the efficiency of mnemonic functioning (See Eysenck, 1982; Hasher & Zacks, 1979) as well as qualitative aspects of such functioning (See Bower, 1981). However, we still know little concerning the principles which govern the appearance of such effects, the mechanisms through which they occur (e.g., elaboration, distinctiveness, effort, etc.) or how different emotional states compare (such as anxiety and depression).

The present study was concerned with comparing the similarity of effects that the emotional states of test anxiety and depression have to meaningful sentence memory. To

address this comparison, we adopted a research paradigm developed by Till (1977; Till, Cormak, & Prince, 1977) and others (e.g., Auble & Franks, 1978; Johnson, Bransford, & Soloman, 1973), that has recently been applied to the problem of memory aging (Till & Walsh, 1980; Till, 1985). This paradigm involves testing memory for sentences for which comprehension is effortful in that it depends on inferring information not explicitly stated. For example, "The general raised his glass in the air" is an example of a sentence that can be interpreted as a "toast," but only by going "beyond the information given" in the sentence. Memory for such sentences can be tested in response to "inferential cues" (e.g., "toast," in the example above). And recall of sentences in response to such cues has been shown to be sensitive to manipulations of semantic processing at input (Till et al., 1977). Thus, recall of sentences to inferential cues apparently is reflective of comprehension of these sentences at input.

Some prior experiments we have done (Hedl & Bartlett, 1981, 1982, 1985) have corroborated the importance of comprehension processes for inference-cued recall of sentences, and have suggested the hypothesis that comprehension can mediate test anxiety/sentence memory relationships. In these experiments, we asked our subjects to respond to each of the sentences in an input list by writing a word or phrase conveying their understanding of it (cf. Till & Walsh, 1980), and we scored each response as indicating an appropriate inference or not. Sentence comprehension as

scored in this manner was strongly associated with subsequent recall of the sentences. Further, measures of state test anxiety were reliably correlated with both sentence comprehension and sentence recall.

Our major goal in the present study was to extend our prior research toward two issues. First, can depression/memory relationships be explained partly by depression/comprehension relationships similar to that for test anxiety/memory. Or, do the links between depression and other memory processes appear to be more critical. Second, does the encoding strategy employed mediate either test anxiety/memory or depression/memory relationships?

Our primary encoding comparison was between imagery and semantic instructions. Imagery was of concern for several reasons. First, our previous research with this paradigm suggested that imagery is a useful strategy (Hedl & Bartlett, 1982). Following a sentence memory experiment in which students were not given a specific encoding strategy to employ college students were asked to describe the strategy (ies) they employed to learn the sentences during the input phase of the experiment. In a series of post hoc analyses, students who reported the use of an imagery strategy showed superior free recall and cued recall of the sentences compared to verbal elaboration, physical strategy, rote or no strategy (See Weinstein (1979) for a description of this classification scheme in the learning strategy area.). But, this was post hoc reporting and the sample size did not permit a useful analysis for possible relationships with level of either trait or state

test anxiety and strategy use.

Second, other researchers have demonstrated the positive effects of imagery across laboratory and educational settings (cf. Levin, 1981; Paivio & Descrochers, 1981; Peters, Levin, McGivern, & Pressley, 1985). In the trait anxiety area, Edmunsen and Nelson (1976) have reported that an imagery strategy was beneficial for high test-anxious students in a paired-associate learning experiment. And imagery can be found in a number of learning strategy programs (O'Neil, 1978; O'Neil & Spielberger, 1979). A recent publication summarizes much of the research on imagery and education (Sheikh & Sheikh, 1985). In general, for adults and for children in second grade and beyond, verbal instructions to form mental images of paired associates, sentences, or even longer prose passages have improved both recognition and recall.

Previous research by Hedl and Bartlett (1981, 1982) has shown that a semantic strategy is useful for sentence memory as well, compared to either no strategy or a pleasantness rating strategy, but no between subjects comparison with imagery was undertaken. In the aging area, Till and his colleagues have shown the superiority of semantic, comprehension-based strategies for the free recall and cued recall of sentences as well (Till, 1985; Till & Walsh, 1980), but they have not studied imagery as a strategy either.

Depression was of concern due to the recent interest in research on the effects of mood states on learning and memory. It has been proposed that the debilitating effects of

a depressed mood state will be greater when the encoding demands are more complex and demanding (Ellis et al., 1984; Ellis et al., 1985). This predicted interaction between depressed mood states and encoding difficulty has some empirical support (e.g., Ellis et al., 1984, Experiments 1 and 3; Hasher & Zacks, 1979). As cognitive processes, both imagery and semantic encoding strategies may vary along a cognitive effort dimension and may produce interesting effects depending upon the nature of the emotional state.

In terms of predictions, the comprehension-mediation hypothesis would be supported if depression showed significant relationships to sentence comprehension and cued recall. It would also be supported if depression effects were stronger in the inference cue recall test compared to the subject cue test. The pattern of depression and anxiety relationships to comprehension and recall should yield important information about the nature of the cognitive processes affected by both states. If both depression and test anxiety yield similar effects, the suggestion would be that they both impact common memorial processes such as comprehension. If, however, the patterns vary as a function of encoding strategy or recall test, then we would have evidence that these emotional states impact qualitatively different cognitive processes (e.g., attention, cognitive effort, etc.).

Although our primary concerns were with comprehension and cued recall, we administered a test of sentence free recall. The purpose of including free recall was based on the finding of Till and Walsh (1980) that, under some encoding conditions,

differences between young and elderly adults are not found in cued recall of sentences, although they are present in free recall of sentences. Although age-related differences and anxiety- or depression-related differences may or may not have similar causes, the Till and Walsh findings raise the possibility of no effects in cued recall. In such a case, the correlations of depression and anxiety to free recall would become matters of interest.

Method

Subjects

Eighty female volunteers from introductory psychology classes were randomly assigned to imagery or semantic encoding strategies and to type of test cue (inference, subject). They received course credit for their participation.

PersonalityMeasures

The revised version of the Worry-Emotionality Questionnaire (WEQ: Morris, Davis, & Hutchings, 1981) was used to measure levels of state test anxiety. The WEQ yields subscale scores for worry and emotionality. Worry refers to intensity (state) of the students' cognitive concern about their performance and emotionality refers to their perceptions of physiological arousal. The WEQ consists of 10 items: five for both worry and emotionality.

The Beck Depression Inventory (BDI: Beck, et al., 1967) was used to measure level of depression. The BDI is a clinically derived self-report inventory of depression designed for use with psychiatric populations (Beck, Ward, Mendelson et al., 1961). It was constructed to assess the

current depth of depression, whether or not depression is viewed as the primary diagnosis. It consists of 21 items covering affective, cognitive, motivational, and physiological areas of depressive symptomatology. Bumberry, Oliver, and McClure (1978) have reported concurrent validity with psychiatric ratings of depression with a college student population. Further, the BDI is a widely used instrument in the study of psychological deficit (e.g., Miller, 1975) and in current use in studying the effects of emotion and cognition with college students (cf. Hasher, Rose, Zacks et al., 1985).

Experimental Materials

A set of 24 sentences, including 4 filler sentences to control for primacy and recency effects, was used from previous research (Hedl & Bartlett, 1981, 1982). These sentences, modeled after Till at al. (1977) and Auble, Franks, and Soraci (1979) were of the form:

The house turned to water because the fire got too hot.

The general raised his glass in the air.

These sentences were developed such that certain inferences or elaborations would be probable for the student engaged in an "elaborate semantic" processing strategy (Craik & Tulving, 1975). Recall was tested with inference cues: igloo was the inference cue for the first example; toast for the second. Sentence subjects (e.g., house, general) were also used as test cues.

Procedure

The experiment was conducted in small groups (about 8 - 10 per session). After being given a brief, general

orientation the students completed the BDI. All students were told that the experiment was concerned with how college students learn and remember sentences. They were given either imagery or semantic encoding instructions. For imagery, they were told that mental imagery was an excellent strategy for learning sentences. As they listened to each sentence they were to try to form a picture of the sentence situation or event. For the semantic instructions, students were told to think about the event being described in each sentence and the things that might be involved in this event. Two example sentences were provided in each condition. Both sets of students were to write down a word or phrase as a response to their interpretation of the sentence. The sentences were read aloud by the experimenter at the rate of one new sentence every 10 sec. Each sentence was presented and immediately repeated to minimize errors of speech perception.

After presentation of the 24 sentences, students performed a writing speed task. They were told to write down as many numbers as they could beginning with 100 and proceeding backwards. Students were then given approximately 5-6 minutes for free recall.[1]

The final test was a cued recall test consisting of either inference cues or subject cues. Students were told of the cue type and shown two sentence examples along with cues. The E then read each cue aloud and allowed 30 sec for their written response.

Immediately following cued recall students completed the WEQ with retrospective state instructions. All students were

then debriefed and given the opportunity to ask any questions.

Comprehension and Sentence Scoring

In terms of scoring, comprehension scores at encoding were derived from students' written responses to sentences of the input list. These comprehension responses were scored as correct if the students listed the main inference (toast) or one that represented some understanding of the sentence (e.g., party, honor). Two raters showed a reliability of .91 for the comprehension scores for a subset of the data. Free and cued recall sentence responses were scored in terms of the lenient criteria established by Till et al. (1977).[2] That is, sentences were scored correct if they were recalled verbatim, contained synonymous substitutions or omissions of partially redundant information, or specified the agent, verb, and some additional information. Reliability of two raters was .96 for a subset of the sentence recall data.

Results

Given the continuous nature of the depression and state test anxiety indices, the primary analytical approach was to examine the magnitude and direction of the correlations between state test anxiety, depression, comprehension, and memory performance separately as a function of two encoding task conditions and type of test cue (inference, subject). Regression equations were then plotted to aid in the interpretation of findings.

Comparison of Imagery andSemantic Strategies

A preliminary set of analyses examined the memory performance and personality measures as a function of encoding

task. As presented in Table 1, the two groups were remarkedly similar on all but one variable (ts' < 1). Students in the imagery condition reported significantly higher levels of concentration at encoding (65%) than those who received semantic (52%) instructions ($p < .05$). The memory performance and the anxiety and depression measures yielded no significant comparisons between encoding conditions.

Insert Table 1 about here

State Test Anxiety and Memory Performance

The correlations between WEQ test anxiety scores and memory performance are presented in Table 2 separately for the two encoding conditions and type of cued recall test.

Insert Table 2 about here

Considering free recall, a consistent pattern of test anxiety and performance correlations was found. State test worry was reliably (and negatively) related to free recall and cued recall in both the imagery ($p < .01$) and semantic encoding conditions ($p < .05$). The magnitude of these correlations was not found to differ significantly. State test emotionality was only significant for free recall in the imagery condition and became non-significant ($r = -.16$) when the common variance with state test worry was partialled out. None of the four state worry or emotionality correlations with comprehension

were significant (See first column of Table 2).

Type of cued recall test used led to a different pattern of test anxiety and memory relationships, however. State test worry was more highly related to cued recall given an inference cue test ($r = -.56$) than a subject cue test ($r = .05$) for students in the semantic condition ($z = 1.70$, $p < .05$, one-tailed). The same trend was noted in the imagery condition with the worry correlation significant for the inference cue test ($p < .05$), but not for the subject cue test. But the difference between these two correlations ($r = -.57, -.31$) was not significant. The four emotionality correlations with cued recall were not significant.

Depression and Memory

In terms of BDI depression scores, a different pattern of correlations emerged between the two encoding conditions, and the magnitude of correlations varied by type of recall test (See Table 2). In the imagery condition, we note a significant positive correlation between BDI scores and memory. Considering all students in this condition, the overall correlation was marginal for free recall ($p < .11$), but significant for inference cued recall ($r = .45$, $p < .05$). The correlation was not significant for subject cue recall. These BDI - cued recall correlations were found to differ significantly ($z = 1.70$, $p < .05$, one-tailed).

In contrast, level of depression was negatively related to both free recall and cued recall for students in the semantic group. Consistent with the imagery group, the free recall - BDI correlation in this group was marginal ($p < .10$).

But, a significant negative correlation was found with the inference cue test ($r = -.50$, $p < .05$) while the BDI - subject cue test correlation was not significant ($r = .17$). These correlations were found to be significantly different ($z = 2.10$, $p < .05$).

Similar to the test anxiety findings, depression scores were not significantly correlated with comprehension scores in either encoding condition (first column of Table 2).

To assist with interpretation of the correlational patterns within groups, plots of the regression equations were made for the inference cue test condition as a function of encoding strategy, and were done separately for depression and state test worry scores as predictors. Figure 1 depicts the two regression lines with BDI depression scores as the predictor and inference cued recall as the criterion. The suggestion is one of an ordinal interaction. At low levels of depression, little difference in cued recall performance was noted between the two encoding strategy conditions. The advantage of imagery was related to increasing levels of depression. In contrast, the semantic strategy led to increasingly poor performance as level of depression increased.

Insert Figures 1 and 2 about here

Figure 2 presents a plot of the equations for the two conditions with state worry as the predictor variable and inference cued recall as the criterion variable. As can be

clearly seen, the relationship between state worry was negative in both strategy conditions and the slopes were essentially the same. In general, plots of the equations for free recall showed the same pattern for BDI and WEQ worry scores as predictors.

To examine the independent effects of depression and state test anxiety, partial correlations were computed separately for each encoding task condition. These are reported in Table 2 in parentheses. In the imagery condition the depression and memory performance correlations remained relatively unchanged when worry was partialled out. In contrast, the depression and performance correlations decreased when worry was partialled in the semantic condition. Similarly, the worry - performance correlations were decreased when the effects of depression were removed in the semantic group.

The independence of the anxiety and depression effects can be seen clearly by examining the intercorrelations of the depression and anxiety measures in each condition. In the imagery condition depression scores were not correlated with either WEQ worry ($r = -.02$) or WEQ emotionality ($r = .02$). For the semantic condition, however, depression scores were reliably related to worry ($r = .63$, $p < .01$) and emotionality ($r = .38$, $p < .05$).

Comprehension and Memory

The correlations between comprehension and memory are presented in Table 2. For free recall, comprehension scores showed similar significant relationships in the two encoding

conditions (rs .45 and .48). In contrast, the relationships between comprehension and cued recall memory varied as a function of encoding condition and type of test cue.

For the imagery encoding group, comprehension was significantly related to recall performance given an inference cue test ($r = .83$, $p < .01$), but not a subject cue test ($r = .17$). The magnitude of these correlations was significantly different ($z = 2.96$, $p < .01$). In the semantic condition, comprehension was significantly correlated with performance under both test conditions. Again, the relationship was stronger in the inference cue condition ($r = .82$), than the subject cue ($r = .51$) condition ($z = 1.73$, $p < .05$, one-tailed).

Discussion

The basic research questions addressed whether the emotional states of depression and state test anxiety would yield parallel effects in long-term sentence memory, whether the effects were both comprehension mediated, and whether the relationships would vary as a function of encoding strategy employed (imagery, semantic). Overall, The answer to the first question is negative, the second perhaps, and affirmative to the third. Across free recall and inference cued recall and type of encoding strategy, state test anxiety (primarily worry) showed consistent, negative relationships to memory. Emotionality was consistently unrelated to performance. In contrast, depression was positively related to free recall and inference cued recall performance in the imagery condition, but negatively related given a semantic

strategy. Neither depression nor state test anxiety showed relationships in cued recall given a subject cue test. Nor did they relate to the direct measure of sentence comprehension.

The test anxiety effects are perhaps the easiest to explain both empirically and theoretically. In our previous studies with this paradigm we have consistently noted main effects for level of test anxiety, particularly the worry component. The observed worry effects were quite consistent, and appeared to hold across a variety of encoding and recall test conditions, but occasionally they appeared to be moderated by encoding strategy (See Hedl & Bartlett, 1981). On the other hand, emotionality was generally unrelated to memory performance. And where significant emotionality - performance correlations were found, they generally became non-significant when the common variance with worry was partialled out. Recent reviews of the test anxiety literature note this pattern as well (Deffenbacher, 1980; Morris et al., 1981).

Hedl and Bartlett (1981, 1982) also find evidence that part of the test anxiety deficit is comprehension-mediated. The previous studies have shown that worry is significantly related to sentence comprehension scores as derived in the present experiment (although the correlations were modest). Although this worry - comprehension relationship was not significant in the present study, the pattern of worry - cued recall correlations is supportive of a comprehension mediation hypothesis. The test anxiety correlations were stronger in

the inference cue test compared to the subject cue test. And the comprehension - recall correlations were more robust in the inference cue test condition as well. From this pattern it is reasonable to assume the presence of an anxiety - comprehension link even though there was not a direct correlation between anxiety and comprehension in this study.

The lack of a significant worry - comprehension correlation in this study is somewhat embarassing for a comprehension mediation hypothesis. Our preferred interpretation of this less than ideal finding is that our comprehension measure might be overly conservative. A student might comprehend a sentence but (a) lack the confidence to write down a response, or (b) write down an idiosyncratic response that a scorer will fail to score as "correct." In support of this view, a previous recognition study found that recognition hit rate was actually higher than the rate of (scored) comprehension (Hedl & Bartlett, 1982). At any rate, it seems clear that more refined measures of comprehension and other sentence memory processes will be necessary to clarify further the nature of test anxiety effects.

The negative depression effect in the semantic encoding condition is similar to previous research and demonstrates that depression effects can be found using an individual difference approach, a point of recent controversy. In three recent studies Hasher et al. (1985) failed to find any depression effects on story recall when the BDI was used to classify college students according to level of depression. Ellis (1985) attributed this failure to find depression

effects to a combination of a mild mood manipulation associated with the use of the BDI as a subject classification procedure and to the use of a task procedure that placed minimal demands on cognitive resources. Our data indicates that the use of the BDI can lead to significant depression effects, and that the depression effects vary as a function of encoding task demands. We, therefore, agree with Ellis (1985) about the importance of task characteristics in the study of depression and cognition, but disagree about the use of the BDI as opposed to a mood induction procedure.

The positive relationship between depression and memory performance in the imagery condition is interesting for several reasons: it is not typical of previous findings in the depression area; it does not appear to be explainable from either a resource allocation model or schema theory of mood effects; and it is not expected from cognitive theories of depression relating depressed mood states to cognitive functioning (e.g., Beck, 1967).

What then can account for the finding of a positive relationship between BDI and inference cue test performance in the imagery condition? Given the strong relationship of encoding processes to recall, we favor some form of an encoding process explanation (Bransford, 1979). That is, level of depression was qualitatively related to one or more processes evoked by imagery. It is not at clear, however, what processes are implicated. The "concentration" measure differentiated the imagery and semantic groups, but this measure was not itself related to performance.

We do not not believe that it is related to post-comprehension processes based upon the results of a previous study. Hedl and Bartlett (1985) studied effort-toward-comprehension as a function of both test anxiety and depression as measured in the present study. In both sets of analyses, effort-toward-comprehension was not differentially related to either test anxiety or depression. Perhaps other elaboration processes or processes related to distinctiveness were involved. The trick, of course, is to explain the positive effects for students at the high end of the depression continuum.

In summary, the present study compared the nature of anxiety and depression effects in sentence memory. A number of parallels to the research literature were noted. The test anxiety data were generally consistent with our prior studies using this paradigm and with the more general test anxiety literature. The similarity of test anxiety effects across the two encoding task conditions suggests a quantitative effect for the emotional state of anxiety. That is, anxiety is interfering with a memory process that underlies performance in a variety of task conditions.

The pattern of depression findings, however, is suggestive of a qualitative effect. That is, different processes were affected by the two encoding strategies and the result varied by level of depression. It was not possible to indicate the mechanism(s) responsible for the different depression effects, but an encoding hypothesis was entertained, given the strong relationship between encoding

and recall ((Bransford, 1979).

A few cautions are in order. The present study involved a correlational approach and did not involve an experimental manipulation of emotional state. Only encoding strategy and type of recall test were varied between subjects. The depression and anxiety scores were obtained from the same subjects. It will remain for future work to compare the effects of anxiety and depression as emotional states on learning, memory, and cognition using some type of between subjects manipulation of mood. It is, of course, difficult to develop manipulations of pure mood state (Polivy, 1981), but the comparisons may be helpful in clarifying the unique findings of this study.

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Author Notes

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Footnotes

1. Previous studies have shown this to be quite adequate for students in this task. In addition, free recall declined linearly as the time interval increased and was unrelated to measures of trait and state test anxiety (Hedl & Bartlett, 1982).

2. Previous studies have examined the use of a strict scoring criterion for sentence comprehension and sentence recall. As expected, the strict scoring led to lower scores for the majority of students. But, the correlations between these two derived scores were high (.90 or beyond), and analyses with the personality measures yielded similar outcomesacross studies (Hedl & Bartlett, 1981, 1982, 1985).

Table 1

Comparison of Imagery and Semantic Encoding Task Conditions

	Encoding Instructions		
	Imagery (n = 40)	Semantic (n = 40)	t
Memory Performance			
Comprehension	9.52 (4.1)	9.18 (3.7)	N.S.
Free Recall	5.90 (2.7)	5.48 (2.5)	N.S.
Cued Recall			
Inference (n = 20)	10.24 (4.3)	9.70 (3.8)	N.S.
Subject (n = 20)	10.37 (3.9)	9.90 (4.0)	N.S.
Overall	10.37 (3.9)	9.90 (4.0)	N.S.
Personality			
Depression (BDI)	6.55 (6.3)	8.72 (6.3)	N.S.
WEQ Worry	10.22 (3.8)	9.58 (3.7)	N.S.
WEQ Emotionality	7.17 (3.0)	6.38 (1.8)	N.S.
Other Measures			
Concentration	.65 (.23)	.52 (.24)	2.47*

*p < .05

Table 2

Correlations of Depression and State Test Anxiety and Memory within Encoding Task Conditions

	Comprehension	Free Recall	Cued Recall	
			I (n = 20)	S (n = 20)
Imagery (n = 40)				
Depression	.19	.21 (.24)	.45* (.53)*	-.10
WEQ Worry	.10	-.55** (-.56)**	-.57** (-.62)**	-.31
WEQ Emotionality	.13	-.42** (-.16)	-.28 (-.05)	-.04
Comprehension	-	.45**	.83**	.17
Semantic (n = 40)				
Depression	.00	-.29 (-.13)	-.50* (-.23)	.17
WEQ Worry	-.04	-.31* (-.17)	-.56** (-.36)	.05
WEQ Emotionality	.03	-.27	-.16	-.29
Comprehension		.48*	.82**	.51*

* $p < .05$ ** $p < .01$

I = Inference cue test, S = Subject cue test
Partial correlations are given in parentheses.

Figure 1

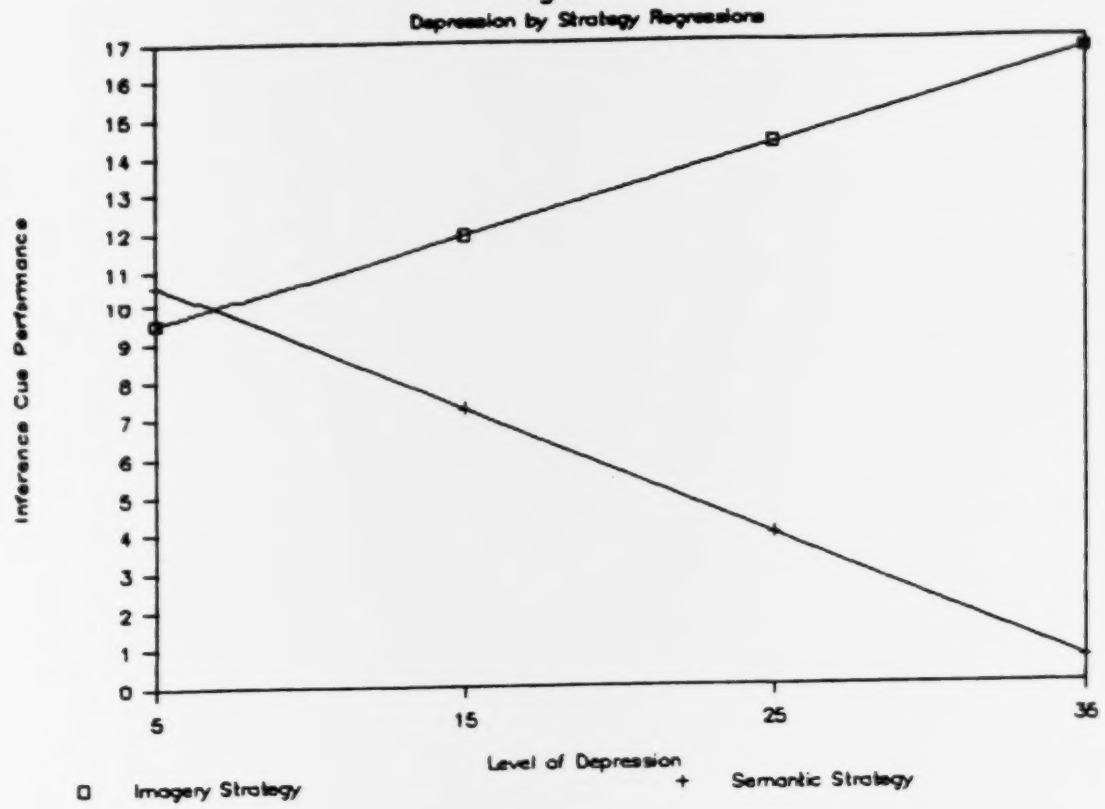
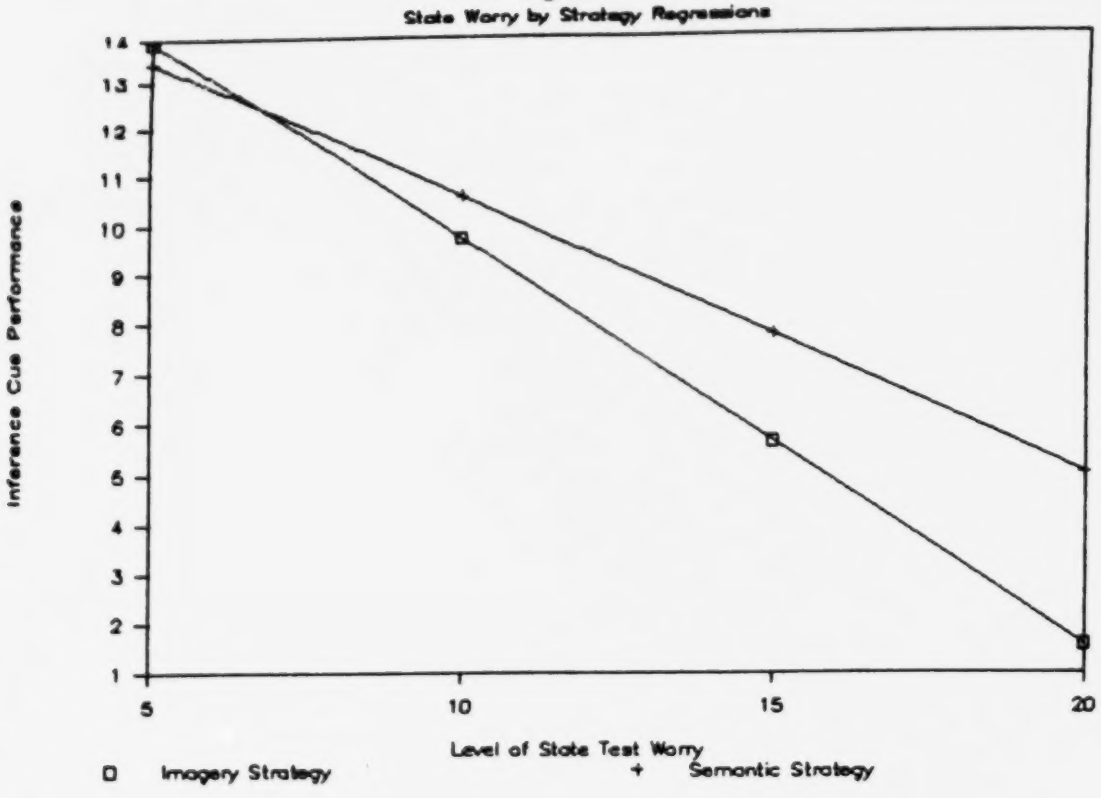

Depression by Strategy Regressions
Inference Cue Performance
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
5
15
25
35
Level of Depression
Imagery Strategy
Semantic Strategy

Figure 2


State Worry by Strategy Regressions
Inference Cue Performance
14
13
12
11
10
9
8
7
6
5
4
3
2
1
5
10
15
20
Level of State Test Worry
□ Imagery Strategy
+ Semantic Strategy